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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LIN, KENNY S	
ART UNIT	**PAPER NUMBER**
2152	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/973,871	BUNN ET AL.	
	Examiner	Art Unit	
	Kenny Lin	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are presented for examination.

Response to Arguments

2. Applicant's arguments, see remark, pages 12-14, filed on 1/29/2007, with respect to the rejection(s) of claim(s) 1-24 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Chapman, Birdwell and Le.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman, US 6,901,049, in view of Birdwell et al (hereinafter Birdwell), US 6,032,197, and Le, US 6,300,887.

5. Chapman was cited in the previous office action. Birdwell was cited by the applicant in IDS submitted on July 3, 2002.

6. As per claims 1 and 13, Chapman taught the invention substantially as claimed including a method/control logic for optimizing the transmission of TCP/IP traffic between a cable modem and a cable modem termination system in a DOCSIS network (col.3, lines 55-63), comprising the steps of:

a. Determining whether the CMTS supports dynamic delta encoding header suppression protocol (col.5, lines 43-67, col.6, lines 1-7); and

b. Responsive to a determination that the CMTS does support the dynamic delta encoding header suppression protocol (col.6, lines 1-5), performing operations including

i. Transmitting fields in protocol headers of protocol packets from the cable modem (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32);

ii. Suppressing redundant fields in protocol headers of subsequent protocol packets (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32).

7. Chapman did not specifically teach the suppression in detail to transmit fields in a first protocol header of a first TCP protocol packet from the cable modem; suppress redundant fields in a second protocol header of a subsequent TCP protocol packet; and transmit a delta-encoded value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded values represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet. Birdwell taught a suppressing method for optimizing the transmission of TCP/IP traffic to transmit fields in a first protocol header of a first TCP protocol packet (col.1, lines 26-58, col.2,

lines 19-36, col.4, lines 42-50, fig.4) from the cable modem; suppress redundant fields in a second protocol header of a subsequent TCP protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52); and transmit a bit value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said bit values indicates a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.6, lines 1-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chapman and Birdwell because Birdwell's teaching of suppressing headers enables Chapman's method of header suppression to remove the non-changing header fields prior to transferring to improve transmission efficiency (see Birdwell, col.1, lines 30-38, col.2, lines 54-60).

8. Chapman and Birdwell did not specifically teach to transmit a delta-encoded value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded values represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet. Le taught to use delta-encoding method for each changing field wherein the delta-encoded values represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet (col.22, lines 29-34, col.24, lines 8-16, col.29, lines 7-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chapman, Birdwell and Le because Le's teaching of delta-encoding enables Chapman and Birdwell's teaching to only send the differences of the value in the original header

with respect to the corresponding value in a reference header (see Le, col.29, lines 7-10: V minus Vref).

9. As per claims 2 and 14, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 1 and 13. Birdwell further taught that step i) further comprises the step of transmitting said first TCP protocol packet with an indicator, wherein said indicator indicates that said first TCP protocol packet is to be learned (col.2, lines 48-67, col.3, lines 1-27, col.5, lines 53-67, col.6, lines 1-20; e.g. flag).

10. As per claims 3 and 15, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 1 and 13. Birdwell further taught that step i) further comprises the step of transmitting said first TCP protocol packet in its entirety and transmitting said subsequent protocol header in a compressed format (col.4, lines 21-25, col.5, lines 11-67, col.6, lines 1-9, 52-54).

11. As per claims 4 and 16, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 1 and 13. Birdwell further taught that said subsequent TCP protocol packet includes a bitmapped change byte, wherein bits in said bitmapped change byte indicate at least one non-redundant field in said second protocol header that has said delta encoded value (col.2, lines 48-67, col.6, lines 1-20, col.7, lines 24-33).

12. As per claims 5 and 17, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 4 and 16. Birdwell further taught to comprise the steps of:

a. Enabling a receiver to learn said first TCP protocol packet (col.1, lines 26-58, col.2, lines 19-36, 48-67, col.3, lines 1-27, col.4, lines 42-50, fig.4),

b. Enabling a receiver to restore said suppressed redundant field in said second protocol header of said subsequent TCP protocol packet using said first TCP protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52, col.6, lines 21-31),

c. Enabling a receiver to restore said non-redundant field in said second protocol header of said subsequent TCP protocol packet using said respective delta-encoded value (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52, col.6, lines 1-20), and

d. Enabling a receiver to provide said restored second protocol header in front of corresponding received data for transmission over an Internet Protocol network (col.1, lines 26-58, col.4, lines 34-67 and col.5, lines 1-19, col.8, lines 15-29; fig. 7).

13. As per claims 6 and 18, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 5 and 17. Birdwell further taught to comprise the steps of:

a. Enabling a receiver to read said bitmapped change byte (col.5, lines 66-67, col.6, lines 1-20, col.7, lines 24-33),

b. Enabling a receiver to retrieve said delta encoded value using said bitmapped change byte (col.5, lines 66-67, col.6, lines 1-20, col.7, lines 24-33),

c. Enabling a receiver to update said respective non-redundant field in said second protocol header using said delta-encoded value (col.7, lines 38-52, col.8, lines 30-44), and

d. Enabling a receiver to restore said second protocol header to its original format (col.7, lines 15-19, 38-52, 54-67, col.8, lines 1-29).

14. As per claims 7 and 19, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 1 and 13. Birdwell further taught to comprise the step of providing said restored second protocol header in front of corresponding received data for transmission over an Internet Protocol network (col.1, lines 26-58, col.4, lines 34-67 and col.5, lines 1-19, col.8, lines 15-29; fig.7).

15. As per claims 8 and 20, Chapman taught the invention substantially as claimed including a method/control logic for receiving packets by a cable modem termination system from a cable modem in a DOCSIS network (col.3, lines 55-63), comprising the steps of:

a. Receiving a message from the cable modem indicating support for a dynamic delta encoding header suppression protocol (col.5, lines 43-67, col.6, lines 1-7); and

b. Responsive to receiving the message, performing operations including (col.6, lines 1-5)

i. Receiving fields in a protocol header of protocol packets from the cable modem (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32);

ii. Receiving an indication that a redundant field in protocol headers of subsequent protocol packets is suppressed (col.4, lines 35-67, col.5, lines 1-13, col.6, lines 8-32).

16. Chapman did not specifically teach the suppression in detail to receive fields in a protocol header of a first TCP protocol packet from the cable modem; receive an indication that a redundant field in a second protocol header of a subsequent TCP protocol packet is suppressed; and receive a delta-encoded values for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded value represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet. Birdwell taught a suppressing method for optimizing the transmission of TCP/IP traffic to receive fields in a protocol header of a first TCP protocol packet from the cable modem (col.1, lines 26-58, col.2, lines 19-36, col.4, lines 42-50, fig.4); receive an indication that a redundant field in a second protocol header of a subsequent TCP protocol packet is suppressed (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52); and receive a bit value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said bit values indicates a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.6, lines 1-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of

Chapman and Birdwell because Birdwell's teaching of suppressing headers enables Chapman's method of header suppression to remove the non-changing header fields prior to transferring to improve transmission efficiency (see Birdwell, col.1, lines 30-38, col.2, lines 54-60).

17. Chapman and Birdwell did not specifically teach to transmit a delta-encoded value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded values represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet. Le taught to use delta-encoding method for each changing field wherein the delta-encoded values represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet (col.22, lines 29-34, col.24, lines 8-16, col.29, lines 7-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chapman, Birdwell and Le because Le's teaching of delta-encoding enables Chapman and Birdwell's teaching to only send the differences of the value in the original header with respect to the corresponding value in a reference header (see Le, col.29, lines 7-10: V minus Vref).

18. As per claims 9 and 21, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 8 and 20. Birdwell further taught that step i) further comprises the step of receiving an indicator with said first TCP protocol packet, wherein said indicator indicates that said first TCP protocol packet is to be learned (col.2, lines 48-67, col.3, lines 1-27, col.5, lines 53-67, col.6, lines 1-20; e.g. flag).

19. As per claims 10 and 22, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 8 and 20. Birdwell further taught that said subsequent TCP protocol packets include a bitmapped change byte, wherein bits in said bitmapped change byte indicate at least one non-redundant field in said second protocol header that has said delta encoded values (col.2, lines 48-67, col.6, lines 1-20, col.7, lines 24-33).

20. As per claims 11 and 23, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 8 and 20. Birdwell further taught to comprise the steps of:

a. Learning said first TCP protocol packet (col.1, lines 26-58, col.2, lines 19-36, 48-67, col.3, lines 1-27, col.4, lines 42-50, fig.4);

b. Using learned information from said first TCP protocol packet to reconstruct said suppressed field in said second protocol header of said subsequent TCP protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 42-50, col.5, lines 11-52, col.6, lines 1-31); and

c. Using said first TCP protocol packet to reconstruct a non-redundant field in said second protocol header of said subsequent TCP protocol packet (col.1, lines 26-58, col.2, lines 19-32, 48-56, col.4, lines 19-26, 34-67 and col.5, lines 1-52, col.8, lines 15-29; fig. 7).

21. As per claims 12 and 24, Chapman, Birdwell and Le taught the invention substantially as claimed in claims 11 and 23. Birdwell further taught to comprise the step of restoring said

subsequent TCP protocol packet to its original format and transmitting said subsequent TCP protocol packet over an Internet Protocol network (col.1, lines 26-58, col.4, lines 34-67 and col.5, lines 1-19, col.8, lines 15-29; fig.7).

Conclusion

22. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenny Lin whose telephone number is (571) 272-3968. The examiner can normally be reached on 8 AM to 5 PM Tue.-Fri. and every other Monday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on (571) 272-3913. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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April 10, 2007